

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently amended) A process of removing H₂S from an H₂S-containing gas stream comprising:

forming a reactant gas mixture comprising said H₂S-containing gas and O₂;

~~at a maintaining the temperature of said reactant gas mixture greater than the dew point of elemental sulfur,~~

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~~whereby~~ flowing a stream of said reactant gas mixture over a catalyst device in a reaction zone such that the contact time of each portion of reactant gas mixture that contacts said catalyst device is less than 200 milliseconds, sufficiently brief to allow whereby the reaction H₂S + 1/2 O₂ → 1/x S_x + H₂O (x = 2, 6 or 8) occurs to occur whereby, forming a product stream is formed comprising gaseous elemental sulfur and water;

passing said product stream into a cooling zone and cooling said product stream to the dewpoint temperature of elemental sulfur, or lower, such that sulfur is condensed from said product stream; and

recovering said condensed elemental sulfur from said cooling zone.

2. (Currently amended) The process of claim 1 wherein said H₂S-containing gas stream comprises another gaseous component, and the process comprising comprises recovering a desired said other gaseous component product from said product stream.

3. (Original) The process of claim 1 wherein said step of flowing a stream of said reactant gas mixture over a catalyst in a reaction zone at a temperature greater than the dew point of elemental sulfur includes keeping the temperature of the catalyst device and/or the reactant gas mixture sufficiently high to deter or prevent sulfur poisoning of said catalyst device.

4. (Currently amended) The process of claim 1 comprising providing a millisecond contact time reactor having a gas mixing zone, a reaction zone capable of withstanding temperatures up to at least 1,500°C, and a cooling zone,

non-H₂S components, it may be preferred to instead employ the system and process described in the inventor's concurrently filed U.S. Patent Application No. ~~10/024,679~~ (Attorney Docket No. 1856-09501) ^{Pat. 6,809,269} ~~10/024,167~~ filed December 18, 2001, entitled "Short Contact Time Catalytic Sulfur Recovery System for Removing H₂S from a Waste Gas Stream." The disclosure of that application is hereby incorporated herein by reference.

Please replace paragraph [0074] with the following amended paragraph:

[0074] In another alternative situation, in which the desulfurized natural gas product is intended for use in the production of synthesis gas, it may be preferable to instead convert the H₂S-containing natural gas stream directly to elemental sulfur and synthesis gas, by way of concurrent CPOX and SCPOX reactions carried out in a single reaction zone over a catalyst that is active for promoting both types of partial oxidation reactions. In that case, the reactor is operated at hydrocarbon, H₂S and O₂ concentrations and process conditions that favor the formation of both sulfur, CO and H₂, as described in co-owned U.S. Patent Application Nos. 09/742,999 (U.S. Patent No. 6,579,510) and 09/625,710 ^{abandoned} (U.S. Patent No.), each of which is hereby incorporated herein by reference.